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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,061	06/24/2003	Shibly S. Ahmed	H1105D	1176
45114	7590	01/12/2005	EXAMINER	
HARRITY & SNYDER, LLP 11240 WAPLES MILL ROAD SUITE 300 FAIRFAX, VA 22030			POMPEY, RON EVERETT	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/602,061

Applicant(s)

AHMED ET AL.

Examiner

Ron E. Pompey

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-15 and 21-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-15 and 21-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 12-15 and 21-29 are rejected under 35 U.S.C. 103(a) as being obvious over Mathew et al. (US-PGPub. 2003/0,151,077) and Yu (US 6,458,662) in further view of Gambino et al. (US 6,689,650).

The applied reference, Yu, has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after

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November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

3. Mathew discloses the limitations of:

- forming an insulating layer on a substrate;
- forming a fin structure (24, fig. 2) on the insulating layer, the fin structure including a first side surface, a second side surface, and a top surface;
- forming source and drain regions at ends of the fin structure (52 and 54, fig. 9);
- depositing a gate material (28, fig. 3) over the fin structure, the gate material surrounding the top surface and the first and second side surfaces;
- etching the gate material to form a first gate electrode and a second gate electrode (46 and 48, fig. 9) on opposite sides of the fin; and
- planarizing the deposited gate material proximate to the fin (50, fig. 8) (column 2, paragraph [0016] – column 5, paragraph [0024]).

4. Yu discloses the limitations of:

- forming an insulating layer on a substrate;
- forming a fin structure (35, fig. 3), having a thickness ranging from 300 – 1500 angstroms (column 3, lines 39-40) on the insulating layer, the fin structure including a first side surface, a second side surface, and a top surface;
- forming source and drain regions at ends of the fin structure (50, fig. 6);

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depositing a gate material (40, fig. 4) over the fin structure, the gate material surrounding the top surface and the first and second side surfaces;

etching the gate material to form a first gate electrode and a second gate electrode (45 , fig. 6) on opposite sides of the fin; and

planarizing the deposited gate material proximate to the fin (41, fig. 5) (column 3, line 24 – column 4, line 15).

5. Mathew and Yu do not disclose the claimed limitation(s) of:

annealing the semiconductor device to activate the source and drain regions; and the thickness of the gate dielectric layer or gate material.

However,

a. Gambino discloses the above claimed limitations regarding:

activating the source/drain in column(s) 6, line(s) 63 - column(s) 7, line(s)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Gambino with Matthew or Yu, because the annealing activates the source/drain regions of the device. Also, It would have been obvious to one of ordinary skill in the art at the time of the invention to form the gate dielectric or gate material to the thickness range claimed, to form a working semiconductor device, since it has been held that where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

### ***Response to Arguments***

2. Applicant's arguments filed on September 29, 2004, pertaining to claims 11-15 and 21-29 have been fully considered but they are not persuasive.

The applicant argues that neither Mathew, Yu nor Gambino disclose the thickness ranges for the fin structure, gate material and gate dielectric as claimed in the present amended application and refutes the use of case law *In re Aller* with case law *In re Ochiai*. However, *In re Aller* points out that unless there is evidence indicating such ranges are critical, there is no support of patentability. Applicants have not disclosed anything that would suggest the claimed ranges have any criticality to them therefore *In re Aller* stands. Also *In re Ochiai*, 71 F.3d 1565, 37 USPQ2d 1127 (Fed. Cir. 1995) addresses the issue of whether an otherwise conventional process could be patented if it were limited to making or using a nonobvious product. The end product is not obvious over the prior art of record therefore this case law does not apply to the above rejections.

### ***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

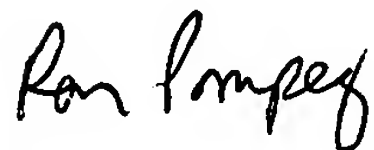
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calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ron E. Pompey whose telephone number is (571) 272-1680.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ron Pompey  
AU: 2812  
January 10, 2005



RICHARD SCOTT  
PRIMARY EXAMINER